

## Statement of Work

### B2 Test Stand – Video System Connectors

The NASA, John C. Stennis Space Center (SSC) has recently decided to go forward with the refurbishment of the B2 Test Stand. The refurbished test facility will provide propulsion test capability which will enable the Space Launch System (SLS) Program's Core Stage Green Run test series. This test series will be used to validate the performance of the SLS Core Stage before launch from the Kennedy Space Center in Florida.

Part of the refurbishment will be the re-design and installation of a new video system. As part of this video system, electrical interface connectors will be required. The work to be performed under this SOW consists of providing electrical interface connectors that will be used to connect between external video control enclosures and the cameras protective housing and the pan and tilt unit. These connectors will be used on all video inter-connect applications.

The B2 video system connectors shall consist of various connectors with different shell sizes and contact count with some including coax cable pins and sockets. The specification page calls out more information about each connector and the pins / sockets that each require. This equipment will be installed in, on and around the B2 test complex.

The effort includes procurement of multiple types of electrical connectors, contacts and connector cabling back-shell hardware. The connectors will be in compliance with the attached specifications.

Spec. Page	Amphenol Part Number	Type	Location
1	TVP00RW19-ADP (LC)	Chassis Mount (M)	LS Housing
2	TV06RW19-ADS (LC)	Cable End (F)	LS Drag-On
3	TVP00RW19-28P	Chassis Mount (M)	TM Housing
4	TV06RW19-28S	Cable End (F)	TM Drag-On
5	TVP00RW25-46S (LC)	Chassis Mount (F)	LS VCB
6	TV06W25-46P (LC)	Cable End (M)	LS Drag-On
7	TVP00RW25-26P (LC)	Chassis Mount (M)	HS Housing
8	TV06W25-26S (LC)	Cable End (F)	HS Drag-On
9	TVP00RW25-26S (LC)	Chassis Mount (F)	HS VCB
10	TV06W25-26P (LC)	Cable End (M)	HS Drag-On
11	PT02E-14-12S	Chassis Mount (F)	P&T Housing
12	PT06SE-14-12P (SR)	Cable End (M)	P&T Drag-On
13	PT02E-18-11S	Chassis Mount (F)	Stage Power
14	PT06SE-18-11P (SR)	Cable End (M)	Stage Power
15	PT02E-14-5S	Chassis Mount (F)	D-SLR VCB
16	PT06SE-14-5P (SR)	Cable End (M)	D-SLR Drag-On
17	PT02E-14-5P	Chassis Mount (M)	D-SLR Housing
18	PT06SE-14-5S (SR)	Cable End (F)	D-SLR Drag-On

Spec. Page	Model Number	Type
19	M39029/58-363	#20 Male Contact
19	M39029/56-351	#20 Female Contact
19	M39029/56-352	#16 Female Contact
19	M39029/58-364	#16 Male Contact
20	M39029/58-365	#12 Male Contact
20	M39029/56-353	#12 Female Contact
20	21-033592-031	#8 Male Coax Contact
20	21-033591-031	#8 Female Coax Contact
21	BN001SRL18104HW	Connector Back-shell
21	BN002SRL18104HW	Connector Back-shell
22	BN001SRL24104HW	Connector Back-shell

The effort to be performed is specifically delineated below:

1. Equipment shall be provided that meets NASA's requirements identified in the attached specification.

NASA SSC shall issue a Fixed Cost Contract for the procurement of Electrical Connectors required to support the B2 Test Stand.

2. The vendor shall identify the Lead time for delivery of Electrical Connectors.
3. The vendor shall provide documentation per the included specifications.

The specifications include:

B2 Video System: Electrical Interface Connector Specifications

# B2 Video System: Electrical Interface Connectors Specifications and Requirements

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The following specifications describe the electrical and mechanical requirements for the video system's electrical interface connectors:

## **TVP00RW19-ADP (LC)**

### **Connector Type:**

Type: TVP

Grade: Commercial

Material: Aluminum

### **Shell Style:**

Designation: 00 – Receptacle, Wall Mount

### **Service Class:**

Designation: RW (Metal)

Corrosion resistant olive drab cadmium plate aluminum, 500 hour salt spray,  
EMI Shielding -50 db@10Ghz specification min., 175°C

### **Shell Size and Insert Arrangement:**

Designation: 19-AD

Shell Size: 19      Insert Arrangement: AD

16 each #20 contacts and 1 each #8 coax contact

### **Contact Type:**

Designation: P

Setup for (Male) or Pin type contacts

### **Alternate Position (Clocking):**

Designation: None

Field Left Blank to indicate normal or no alternate clocking

### **Special Variation:**

Designation: (LC)

This connector is supplied without contacts. (LC) – Less Contacts

## **TV06RW19-ADS (LC)**

### **Connector Type:**

Type: TVP

Grade: Commercial

Material: Aluminum

### **Shell Style:**

Designation: 06 – Straight Plug

### **Service Class:**

Designation: RW (Metal)

Corrosion resistant olive drab cadmium plate aluminum, 500 hour salt spray, EMI Shielding -50 db@10Ghz specification min., 175°C

### **Shell Size and Insert Arrangement:**

Designation: 19-AD

Shell Size: 19      Insert Arrangement: AD

16 each #20 contacts and 1 each #8 coax contact

### **Contact Type:**

Designation: S

Setup for (Female) or Socket type contacts

### **Alternate Position (Clocking):**

Designation: None

Indicates normal or no alternate clocking

### **Special Variation:**

Designation: (LC)

This connector is supplied without contacts. (LC) – Less Contacts

## **TVP00RW19-28P (LC)**

### **Connector Type:**

Type: TVP

Grade: Commercial

Material: Aluminum

### **Shell Style:**

Designation: 00 – Receptacle, Wall Mount

### **Service Class:**

Designation: RW (Metal)

Corrosion resistant olive drab cadmium plate aluminum, 500 hour salt spray, EMI Shielding -50 db@10Ghz specification min., 175°C

### **Shell Size and Insert Arrangement:**

Designation: 19-28

Shell Size: 19      Insert Arrangement: 28

26 each #20 contacts and 2 each #16 coax contact

### **Contact Type:**

Designation: P

Setup for (Male) or Pin type contacts

### **Alternate Position (Clocking):**

Designation: None

Indicate normal or no alternate clocking

### **Special Variation:**

Designation: (LC)

This connector is supplied without contacts. (LC) – Less Contacts

## **TV06RW19-28S (LC)**

### **Connector Type:**

Type: TVP

Grade: Commercial

Material: Aluminum

### **Shell Style:**

Designation: 06 – Straight Plug

### **Service Class:**

Designation: RW (Metal)

Corrosion resistant olive drab cadmium plate aluminum, 500 hour salt spray, EMI Shielding -50 db@10Ghz specification min., 175°C

### **Shell Size and Insert Arrangement:**

Designation: 19-28

Shell Size: 19      Insert Arrangement: 28

26 each #20 contacts and 2 each #16 coax contact

### **Contact Type:**

Designation: S

Setup for (Female) or Socket type contacts

### **Alternate Position (Clocking):**

Designation: None

Indicate normal or no alternate clocking

### **Special Variation:**

Designation: (LC)

This connector is supplied without contacts. (LC) – Less Contacts

## **TVP00RW25-46S (LC)**

### **Connector Type:**

Type: TVP

Grade: Commercial

Material: Aluminum

### **Shell Style:**

Designation: 00 – Receptacle, Wall Mount

### **Service Class:**

Designation: RW (Metal)

Corrosion resistant olive drab cadmium plate aluminum, 500 hour salt spray, EMI Shielding -50 db@10Ghz specification min., 175°C

### **Shell Size and Insert Arrangement:**

Designation: 25-46

Shell Size: 25      Insert Arrangement: 46

40 each #20 contacts and 4 each #16 contacts and 2 each #8 coax contacts

### **Contact Type:**

Designation: S

Setup for (Female) or Socket type contacts

### **Alternate Position (Clocking):**

Designation: None

Indicate normal or no alternate clocking

### **Special Variation:**

Designation: (LC)

This connector is supplied without contacts. (LC) – Less Contacts

## **TV06RW25-46P (LC)**

### **Connector Type:**

Type: TVP

Grade: Commercial

Material: Aluminum

### **Shell Style:**

Designation: 06 – Straight Plug

### **Service Class:**

Designation: RW (Metal)

Corrosion resistant olive drab cadmium plate aluminum, 500 hour salt spray, EMI Shielding -50 db@10Ghz specification min., 175°C

### **Shell Size and Insert Arrangement:**

Designation: 25-46

Shell Size: 25      Insert Arrangement: 46

40 each #20 contacts and 4 each #16 contacts and 2 each #8 coax contacts

### **Contact Type:**

Designation: P

Setup for (Male) or Pin type contacts

### **Alternate Position (Clocking):**

Designation: None

Indicate normal or no alternate clocking

### **Special Variation:**

Designation: (LC)

This connector is supplied without contacts. (LC) – Less Contacts



## **TVP00RW25-26P (LC)**

### **Connector Type:**

Type: TVP

Grade: Commercial

Material: Aluminum

### **Shell Style:**

Designation: 00 – Receptacle, Wall Mount

### **Service Class:**

Designation: RW (Metal)

Corrosion resistant olive drab cadmium plate aluminum, 500 hour salt spray, EMI Shielding -50 db@10Ghz specification min., 175°C

### **Shell Size and Insert Arrangement:**

Designation: 25-26

Shell Size: 25      Insert Arrangement: 26

16 each #20 contacts and 5 each #12 contacts and 4 each #8 coax contacts

### **Contact Type:**

Designation: P

Setup for (Male) or Pin type contacts

### **Alternate Position (Clocking):**

Designation: None

Indicate normal or no alternate clocking

### **Special Variation:**

Designation: (LC)

This connector is supplied without contacts. (LC) – Less Contacts

## **TV06RW25-26P (LC)**

### **Connector Type:**

Type: TVP

Grade: Commercial

Material: Aluminum

### **Shell Style:**

Designation: 06 – Straight Plug

### **Service Class:**

Designation: RW (Metal)

Corrosion resistant olive drab cadmium plate aluminum, 500 hour salt spray, EMI Shielding -50 db@10Ghz specification min., 175°C

### **Shell Size and Insert Arrangement:**

Designation: 25-26

Shell Size: 25      Insert Arrangement: 26

16 each #20 contacts and 5 each #12 contacts and 4 each #8 coax contacts

### **Contact Type:**

Designation: P

Setup for (Male) or Pin type contacts

### **Alternate Position (Clocking):**

Designation: None

Indicate normal or no alternate clocking

### **Special Variation:**

Designation: (LC)

This connector is supplied without contacts. (LC) – Less Contacts

## **TVP00RW25-26S (LC)**

### **Connector Type:**

Type: TVP

Grade: Commercial

Material: Aluminum

### **Shell Style:**

Designation: 00 – Receptacle, Wall Mount

### **Service Class:**

Designation: RW (Metal)

Corrosion resistant olive drab cadmium plate aluminum, 500 hour salt spray, EMI Shielding -50 db@10Ghz specification min., 175°C

### **Shell Size and Insert Arrangement:**

Designation: 25-26

Shell Size: 25      Insert Arrangement: 26

16 each #20 contacts and 5 each #12 contacts and 4 each #8 coax contacts

### **Contact Type:**

Designation: S

Setup for (Female) or Socket type contacts

### **Alternate Position (Clocking):**

Designation: None

Indicate normal or no alternate clocking

### **Special Variation:**

Designation: (LC)

This connector is supplied without contacts. (LC) – Less Contacts

## **TV06RW25-26S (LC)**

### **Connector Type:**

Type: TVP

Grade: Commercial

Material: Aluminum

### **Shell Style:**

Designation: 06 – Straight Plug

### **Service Class:**

Designation: RW (Metal)

Corrosion resistant olive drab cadmium plate aluminum, 500 hour salt spray, EMI Shielding -50 db@10Ghz specification min., 175°C

### **Shell Size and Insert Arrangement:**

Designation: 25-26

Shell Size: 25      Insert Arrangement: 26

16 each #20 contacts and 5 each #12 contacts and 4 each #8 coax contacts

### **Contact Type:**

Designation: S

Setup for (Female) or Socket type contacts

### **Alternate Position (Clocking):**

Designation: None

Indicate normal or no alternate clocking

### **Special Variation:**

Designation: (LC)

This connector is supplied without contacts. (LC) – Less Contacts

## **PT02E-14-12S**

### **Connector Type:**

Type: PT

Grade: Commercial

Material: Aluminum

### **Shell Style:**

Designation: 02 – Receptacle, Box Mount

### **Service Class:**

Designation: E

Corrosion resistant olive drab cadmium plate aluminum, 3 point bayonet lock.

Factory installed solder contacts and environmental resisting open wire seal with grommet and nut.

### **Shell Size and Insert Arrangement:**

Designation: 14-12

Shell Size: 14      Insert Arrangement: 12

8 each #20 contacts and 4 each #16 contacts ( included )

### **Contact Type:**

Designation: S

Setup for (Female) or Socket type contacts

### **Alternate Position (Clocking):**

Designation: None

Indicate normal or no alternate insert clocking

### **Special Variation:**

Designation: None

## **PT06SE-14-12P (SR)**

### **Connector Type:**

Type: TVP

Grade: Commercial

Material: Aluminum

### **Shell Style:**

Designation: 06 – Straight Plug

### **Service Class:**

Designation: SE

Corrosion resistant olive drab cadmium plate aluminum, 3 point bayonet lock.  
Rear insertable / front release crimp contacts. Environmental resistant.

### **Shell Size and Insert Arrangement:**

Designation: 14-12

Shell Size: 14      Insert Arrangement: 12

8 each #20 contacts and 4 each #16 contacts ( included )

### **Contact Type:**

Designation: P

Setup for (Male) or Pin type contacts

### **Alternate Position (Clocking):**

Designation: None

Indicate normal or no alternate insert clocking

### **Special Variation:**

Designation: (SR)

This connector is supplied with (SR) - Strain Relief

## **PT02E-18-11S**

### **Connector Type:**

Type: PT

Grade: Commercial

Material: Aluminum

### **Shell Style:**

Designation: 02 – Receptacle, Box Mount

### **Service Class:**

Designation: E

Corrosion resistant olive drab cadmium plate aluminum, 3 point bayonet lock.

Factory installed solder contacts and environmental resisting open wire seal with grommet and nut.

### **Shell Size and Insert Arrangement:**

Designation: 18-11

Shell Size: 18      Insert Arrangement: 11

11 each #16 contacts ( included )

### **Contact Type:**

Designation: S

Setup for (Female) or Socket type contacts

### **Alternate Position (Clocking):**

Designation: None

Indicate normal or no alternate insert clocking

### **Special Variation:**

Designation: None

## **PT06SE-18-11P (SR)**

### **Connector Type:**

Type: TVP

Grade: Commercial

Material: Aluminum

### **Shell Style:**

Designation: 06 – Straight Plug

### **Service Class:**

Designation: SE

Corrosion resistant olive drab cadmium plate aluminum, 3 point bayonet lock.  
Rear insertable / front release crimp contacts. Environmental resistant.

### **Shell Size and Insert Arrangement:**

Designation: 18-11

Shell Size: 18      Insert Arrangement: 11

11 each #16 contacts ( included )

### **Contact Type:**

Designation: P

Setup for (Male) or Pin type contacts

### **Alternate Position (Clocking):**

Designation: None

Indicate normal or no alternate insert clocking

### **Special Variation:**

Designation: (SR)

This connector is supplied with (SR) - Strain Relief



## **PT02E-14-05S**

### **Connector Type:**

Type: PT

Grade: Commercial

Material: Aluminum

### **Shell Style:**

Designation: 02 -- Receptacle, Box Mount

### **Service Class:**

Designation: E

Corrosion resistant olive drab cadmium plate aluminum, 3 point bayonet lock.

Factory installed solder contacts and environmental resisting open wire seal with grommet and nut.

### **Shell Size and Insert Arrangement:**

Designation: 14-05

Shell Size: 14      Insert Arrangement: 5

5 each #16 contacts ( included )

### **Contact Type:**

Designation: S

Setup for (Female) or Socket type contacts

### **Alternate Position (Clocking):**

Designation: None

Indicate normal or no alternate insert clocking

### **Special Variation:**

Designation: None

## **PT06SE-14-05P (SR)**

### **Connector Type:**

Type: TVP

Grade: Commercial

Material: Aluminum

### **Shell Style:**

Designation: 06 – Straight Plug

### **Service Class:**

Designation: SE

Corrosion resistant olive drab cadmium plate aluminum, 3 point bayonet lock.  
Rear insertable / front release crimp contacts. Environmental resistant.

### **Shell Size and Insert Arrangement:**

Designation: 14-05

Shell Size: 14      Insert Arrangement: 5

5 each #16 contacts ( included )

### **Contact Type:**

Designation: P

Setup for (Male) or Pin type contacts

### **Alternate Position (Clocking):**

Designation: None

Indicate normal or no alternate insert clocking

### **Special Variation:**

Designation: (SR)

This connector is supplied with (SR) - Strain Relief

## **PT02E-14-05P**

### **Connector Type:**

Type: PT

Grade: Commercial

Material: Aluminum

### **Shell Style:**

Designation: 02 – Receptacle, Box Mount

### **Service Class:**

Designation: E

Corrosion resistant olive drab cadmium plate aluminum, 3 point bayonet lock.

Factory installed solder contacts and environmental resisting open wire seal with grommet and nut.

### **Shell Size and Insert Arrangement:**

Designation: 14-05

Shell Size: 14      Insert Arrangement: 5

5 each #16 contacts ( included )

### **Contact Type:**

Designation: P

Setup for (Male) or Pin type contacts

### **Alternate Position (Clocking):**

Designation: None

Indicate normal or no alternate insert clocking

### **Special Variation:**

Designation: None

## **PT06SE-14-05S (SR)**

### **Connector Type:**

Type: TVP

Grade: Commercial

Material: Aluminum

### **Shell Style:**

Designation: 06 – Straight Plug

### **Service Class:**

Designation: SE

Corrosion resistant olive drab cadmium plate aluminum, 3 point bayonet lock.  
Rear insertable / front release crimp contacts. Environmental resistant.

### **Shell Size and Insert Arrangement:**

Designation: 14-05

Shell Size: 14      Insert Arrangement: 5

5 each #16 contacts ( included )

### **Contact Type:**

Designation: S

Setup for (Female) or Socket type contacts

### **Alternate Position (Clocking):**

Designation: None

Indicate normal or no alternate insert clocking

### **Special Variation:**

Designation: (SR)

This connector is supplied with (SR) - Strain Relief

# B2 Video System: Electrical Interface Connectors

## Contact Ratings and Part Numbers

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The following specifications describe the electrical and mechanical requirements for the electrical contacts that will be used in the video system's electrical interface connectors:

### **M39029/58-363**

**Contact Info:**

Size: #20 Male (Pin)

Grade: Military

Material: Standard 500 Cycle finish – gold plating over suitable underplate in accordance with SAE AS39029

### **M39029/56-351**

**Contact Info:**

Size: #20 Female (Socket)

Grade: Military

Material: Standard 500 Cycle finish – gold plating over suitable underplate in accordance with SAE AS39029

### **M39029/58-364**

**Contact Info:**

Size: #16 Male (Pin)

Grade: Military

Material: Standard 500 Cycle finish – gold plating over suitable underplate in accordance with SAE AS39029

### **M39029/56-352**

**Contact Info:**

Size: #16 Female (Socket)

Grade: Military

Material: Standard 500 Cycle finish – gold plating over suitable underplate in accordance with SAE AS39029

## **M39029/58-365**

**Contact Info:**

**Size: #12 Male (Pin)**

**Grade: Military**

**Material: Standard 500 Cycle finish – gold plating over suitable underplate in accordance with SAE AS39029**

## **M39029/56-353**

**Contact Info:**

**Size: #12 Female (Socket)**

**Grade: Military**

**Material: Standard 500 Cycle finish – gold plating over suitable underplate in accordance with SAE AS39029**

## **21-033592-031**

**Contact Info:**

**Size: #8 Male Matched High Frequency Coaxial Contact**

**Grade: Military**

**Frequency Range: 0 – 3 GHz**

**Material: Gold Plated with 0.000050 min. of gold over nickel. 75 ohm nominal impedance**

## **21-033591-031**

**Contact Info:**

**Size: #8 Female Matched High Frequency Coaxial Contact**

**Grade: Military**

**Frequency Range: 0 – 3 GHz**

**Material: Gold Plated with 0.000050 min. of gold over nickel. 75 ohm nominal impedance**

# B2 Video System: Electrical Interface Connectors

## Non-Environmental Backshells w/ Strain Relief

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The following specifications describe the mechanical requirements for the strain relief or backshells that will be used on the video system's electrical interface connectors:

### **BN001SRL18109HW**

**Backshell Type:**

Type: BN001

Angle Profile: Straight – (S)

Coupling: Rotatable – (R)

Connector Group: (L) - MIL-DTL-38999 Series III and IV

Shell Size: - (18) = Size 19 in a L connector group

Entry Size: (10) - .780 Length and 1.332 wide for cable size between 0.350" and 0.625"

Total Backshell Length: (4) -  $4 \times 0.5" = 2.0"$

Strain Relief Style: (H) – Clamp Heavy Duty

Material: (W) – Cadmium, Olive Drab plated aluminium

### **BN002SRL18104HW**

**Backshell Type:**

Type: BN002

Angle Profile: Straight – (S)

Coupling: Rotatable – (R)

Connector Group: (L) - MIL-DTL-38999 Series III and IV

Shell Size: - (18) = Size 19 in a L connector group

Entry Size: (10) - .780 Length and 1.332 wide for cable size between 0.350" and 0.625"

Total Backshell Length: (4) -  $4 \times 0.5" = 2.0"$

Strain Relief Style: (H) – Clamp Heavy Duty

Material: (W) – Cadmium, Olive Drab plated aluminium

## **BN001SRL24109HW**

### **Backshell Type:**

Type: BN001

Angle Profile: Straight – (S)

Coupling: Rotatable – (R)

Connector Group: (L) - MIL-DTL-38999 Series III and IV

Shell Size: - (24) = Size 25 in a L connector group

Entry Size: (10) - .780 Length and 1.332 wide for cable size between 0.350" and 0.625"

Total Backshell Length: (4) -  $4 \times 0.5" = 2.0"$

Strain Relief Style: (H) – Clamp Heavy Duty

Material: (W) – Cadmium, Olive Drab plated aluminium